

We claim:

1 1. A method of upgrading a software application from a user modified prior  
2 version to an upgrade version, wherein the user modified prior version and the upgrade  
3 version have a common ancestor version, said method comprising:  
4 determining a first set of differences based on a comparison of the user  
5 modified prior version and the common ancestor version;  
6 determining a second set of differences based on a comparison of the upgrade  
7 version and the common ancestor version;  
8 determining which differences from said first and second sets of differences are  
9 compatible differences and which are conflicting differences; and  
10 applying changes to the upgrade version associated with said compatible  
11 differences.

1 2. The method of claim 1, wherein the user modified prior version comprises a  
2 first plurality of objects and the common ancestor version comprises a second plurality  
3 of objects, and wherein said determining said first set of differences comprises:  
4 determining whether one or more objects from said first plurality of objects  
5 share a common name with one or more objects from said second plurality of objects,  
6 and if so, determining whether attributes associated with the commonly named objects  
7 are identical, and if not, including data related to the difference between said attributes  
8 in said first set of differences.

1 3. The method of claim 2, wherein the difference between said attributes is  
2 determined to be a compatible difference if said attributes are superficial.

1 4. The method of claim 3, wherein said attributes are designated as being  
2 superficial by a user.

1 5. The method of claim 2, wherein the upgrade version comprises a third plurality  
2 of objects, and wherein said determining said second set of differences comprises:  
3 determining whether one or more objects from said second plurality of objects  
4 share a common name with one or more objects from said third plurality of objects, and

5 if so, determining whether attributes associated with the commonly named objects are  
6 identical, and if not, including data related to the difference between said attributes in  
7 said second set of differences.

1 6. The method of claim 1, further comprising determining a third set of differences  
2 based on a comparison of the upgrade version and the user modified prior version.

1 7. The method of claim 6, wherein the user modified prior version comprises a  
2 first plurality of objects, the common ancestor version comprises a second plurality of  
3 objects, and the upgrade version comprises a third plurality of objects, and wherein said  
4 determining said third set of differences comprises:

5 determining whether an object from said first plurality of objects is not included  
6 within said second or third plurality of objects, and if so, indicating that the addition of  
7 said object to said first plurality of objects is a compatible difference.

1 8. The method of claim 7, wherein said applying changes to the upgrade version  
2 associated with said compatible differences comprises adding said object to the upgrade  
3 version.

1 9. The method of claim 6, wherein the user modified prior version comprises a  
2 first plurality of objects, the common ancestor version comprises a second plurality of  
3 objects, and the upgrade version comprises a third plurality of objects, and wherein said  
4 determining said third set of differences comprises:

5 determining whether an object from said second and third plurality of objects is  
6 not included within said first plurality of objects, and if so, indicating that the deletion  
7 of said object from said first plurality of objects is a conflicting difference.

1 10. The method of claim 9, wherein said applying changes to the upgrade version  
2 associated with said compatible differences comprises adding said object to the upgrade  
3 version.

1 11. Computer executable software code for upgrading a software application from a  
2 user modified prior version to an upgrade version, wherein the user modified prior

3 version and the upgrade version have a common ancestor version, said software code  
4 comprising:

5 code to determine a first set of differences based on a comparison of the user  
6 modified prior version and the common ancestor version;

7 code to determine a second set of differences based on a comparison of the  
8 upgrade version and the common ancestor version;

9 code to determine which differences from said first and second sets of  
10 differences are compatible differences and which are conflicting differences; and

11 code to apply changes to the upgrade version associated with said compatible  
12 differences.

1 12. The software code of claim 11, wherein the user modified prior version  
2 comprises a first plurality of objects and the common ancestor version comprises a  
3 second plurality of objects, and wherein said code to determine said first set of  
4 differences comprises:

5 code to determine whether one or more objects from said first plurality of  
6 objects share a common name with one or more objects from said second plurality of  
7 objects, and if so, to determine whether attributes associated with the commonly named  
8 objects are identical, and if not, to include data related to the difference between said  
9 attributes in said first set of differences.

1 13. The software code of claim 12, wherein the difference between said attributes is  
2 determined to be a compatible difference if said attributes are superficial.

1 14. The software code of claim 12, wherein the upgrade version comprises a third  
2 plurality of objects, and wherein said code to determine said second set of differences  
3 comprises:

4 code to determine whether one or more objects from said second plurality of  
5 objects share a common name with one or more objects from said third plurality of  
6 objects, and if so, to determine whether attributes associated with the commonly named  
7 objects are identical, and if not, to include data related to the difference between said  
8 attributes in said second set of differences.

1 15. The software code of claim 11, further comprising code to determine a third set  
2 of differences based on a comparison of the upgrade version and the user modified  
3 prior version.

1 16. The software code of claim 15, wherein the user modified prior version  
2 comprises a first plurality of objects, the common ancestor version comprises a second  
3 plurality of objects, and the upgrade version comprises a third plurality of objects, and  
4 wherein said code to determine said third set of differences comprises:

5 code to determine whether an object from said first plurality of objects is not  
6 included within said second or third plurality of objects, and if so, to indicate that the  
7 addition of said object to said first plurality of objects is a compatible difference.

1 17. The software code of claim 16, wherein said code to apply changes to the  
2 upgrade version associated with said compatible differences comprises code to add said  
3 object to the upgrade version.

1 18. The software code of claim 17, wherein the user modified prior version  
2 comprises a first plurality of objects, the common ancestor version comprises a second  
3 plurality of objects, and the upgrade version comprises a third plurality of objects, and  
4 wherein said code to determine said third set of differences comprises:

5 code to determine whether an object from said second and third plurality of  
6 objects is not included within said first plurality of objects, and if so, to indicate that the  
7 deletion of said object from said first plurality of objects is a conflicting difference.

1 19. The software code of claim 18, wherein said code to apply changes to the  
2 upgrade version associated with said compatible differences comprises code to add said  
3 object to the upgrade version.

1 20. An apparatus for upgrading a software application from a user modified prior  
2 version to an upgrade version, wherein the user modified prior version and the upgrade  
3 version have a common ancestor version, said apparatus comprising:

4 means for determining a first set of differences based on a comparison of the  
5 user modified prior version and the common ancestor version;

6 means for determining a second set of differences based on a comparison of the  
7 upgrade version and the common ancestor version;  
8 means for determining which differences from said first and second sets of  
9 differences are compatible differences and which are conflicting differences; and  
10 means for applying changes to the upgrade version associated with said  
11 compatible differences.

1 21. The apparatus of claim 20, wherein the user modified prior version comprises a  
2 first plurality of objects and the common ancestor version comprises a second plurality  
3 of objects, and wherein said means for determining said first set of differences  
4 comprises:

5 means for determining whether one or more objects from said first plurality of  
6 objects share a common name with one or more objects from said second plurality of  
7 objects, and if so, for determining whether attributes associated with the commonly  
8 named objects are identical, and if not, for including data related to the difference  
9 between said attributes in said first set of differences.

1 22. A method of upgrading a software application from a user modified prior  
2 version to an upgrade version, wherein the user modified prior version and the upgrade  
3 version have a common ancestor version, said method comprising:

4 comparing the user modified prior version, the common ancestor version, and  
5 the upgrade version to determine differences;

6 determining which of said differences are compatible and which are conflicting;  
7 and

8 applying changes to the upgrade version associated with said compatible  
9 differences.

1 23. The method of claim 22, wherein the user modified prior version comprises a  
2 first plurality of objects, the common ancestor version comprises a second plurality of  
3 objects, the upgrade version comprises a third plurality of objects, and wherein said  
4 comparing comprises comparing said first plurality of objects with said second and  
5 third pluralities of objects to determine whether objects were added, deleted, or  
6 modified by a user.

1 24. The method of claim 23, wherein said determining comprises:  
2 indicating that differences associated with objects added by said user are  
3 compatible differences;  
4 indicating that differences associated with objects deleted by said user are  
5 conflicting differences; and  
6 indicating that differences associated with objects modified by said user are  
7 compatible differences if said objects modified by said user are superficial.

1 25. Computer executable software code for upgrading a software application from a  
2 user modified prior version to an upgrade version, wherein the user modified prior  
3 version and the upgrade version have a common ancestor version, said software code  
4 comprising:  
5 code to compare the user modified prior version, the common ancestor version,  
6 and the upgrade version to determine differences;  
7 code to determine which of said differences are compatible and which are  
8 conflicting; and  
9 code to apply changes to the upgrade version associated with said compatible  
10 differences.

1 26. The software code of claim 25, wherein the user modified prior version  
2 comprises a first plurality of objects, the common ancestor version comprises a second  
3 plurality of objects, the upgrade version comprises a third plurality of objects, and  
4 wherein said code to compare comprises code to compare said first plurality of objects  
5 with said second and third pluralities of objects to determine whether objects were  
6 added, deleted, or modified by a user.

1 27. The software code of claim 26, wherein said code to determine comprises:  
2 code to indicate that differences associated with objects added by said user are  
3 compatible differences;  
4 code to indicate that differences associated with objects deleted by said user are  
5 conflicting differences; and

- 6 code to indicate that differences associated with objects modified by said user
- 7 are compatible differences if said objects modified by said user are superficial.

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